

2018 31st SIBGRAPI Conference on Graphics, Patterns and Images (SIBGRAPI 2018)

**Parana, Brazil
29 October – 1 November 2018**



**IEEE Catalog Number: CFP18129-POD
ISBN: 978-1-5386-9265-3**

**Copyright © 2018 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP18129-POD
ISBN (Print-On-Demand):	978-1-5386-9265-3
ISBN (Online):	978-1-5386-9264-6
ISSN:	1530-1834

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

2018 31st SIBGRAPI Conference on Graphics, Patterns and Images (SIBGRAPI) **SIBGRAPI 2018**

Table of Contents

SIBGRAPI 2018 Foreword .xii.....	
SIBGRAPI 2018 Program Committee .xiv.....	

Technical Papers

Adaptive Patches for Mesh Denoising .1.....	
<i>Jan Hurtado (Pontifícia Universidade Católica do Rio de Janeiro), Marcelo Gattass (Pontifícia Universidade Católica do Rio de Janeiro), Alberto Raposo (Pontifícia Universidade Católica do Rio de Janeiro), and Jéferson Coelho (Pontifícia Universidade Católica do Rio de Janeiro)</i>	
Hidden Surface Removal for Accurate Painting-Area Calculation on CAD Models .9.....	
<i>Lucas Figueiredo (Pontifical Catholic University of Rio de Janeiro), Paulo Ivson (Pontifical Catholic University of Rio de Janeiro), and Waldemar Celes (Pontifical Catholic University of Rio de Janeiro)</i>	
Synthesizing Periodic Tilings of Regular Polygons .17.....	
<i>Asla Medeiros e Sá (FGV EMap), Luiz Henrique de Figueiredo (IMPA), and José Ezequiel Soto Sánchez (IMPA)</i>	
Unsupervised Dialogue Act Classification with Optimum-Path Forest .25.....	
<i>Luiz Carlos Felix Ribeiro (São Paulo State University) and João Paulo Papa (São Paulo State University)</i>	
A Method for Opinion Classification in Video Combining Facial Expressions and Gestures .33.....	
<i>Airton Gaio Junior (Federal University of Amazonas) and Eulanda Miranda dos Santos (Federal University of Amazona)</i>	
Deep Feature-Based Classifiers for Fruit Fly Identification (Diptera: Tephritidae) .41.....	
<i>Matheus Macedo Leonardo (Universidade Federal de São Paulo), Tiago J. Carvalho (Federal Institute of São Paulo), Edmar Rezende (University of Campinas), Roberto Zucchi (University of São Paulo), and Fabio Augusto Faria (Universidade Federal de São Paulo)</i>	
Active Learning Approaches for Deforested Area Classification .48.....	
<i>Fernanda B. J. R. Dallaqua (Universidade Federal de São Paulo), Fabio Augusto Faria (Universidade Federal de São Paulo), and Alvaro L. Fazenda (Universidade Federal de São Paulo)</i>	

Real-Time High-Quality Specular Highlight Removal Using Efficient Pixel Clustering .56.....	<i>Antonio Carlos dos Santos Souza (Federal Institute of Bahia), Márcio Cerqueira de Farias Macedo (Federal University of Bahia), Verônica Paixão do Nascimento (Federal Institute of Bahia), and Bruno Santos Oliveira (Computação Brasil)</i>
Video Denoising Quality Assessment for Different Noise Distributions .64.....	<i>Rafael Lucien Bahr Arias (Universidade Estadual de Londrina) and Alan Salvany Felinto (Universidade Estadual de Londrina)</i>
Restoration of Images Affected by Welding Fume .72.....	<i>Edwilson Silva Vaz Junior (Universidade Federal do Rio Grande), Paulo Jorge Lilles Drews Junior (Universidade Federal do Rio Grande), and Cristiano Rafael Steffens (Universidade Federal do Rio Grande)</i>
GuidedNet: Single Image Dehazing Using an End-to-End Convolutional Neural Network .79.....	<i>Lucas Teixeira Gonçalves (Universidade Federal do Rio Grande), Joel Felipe de Oliveira Gaya (Universidade Federal do Rio Grande), Paulo Jorge Lilles Drews Junior (Universidade Federal do Rio Grande), and Silvia Silva da Costa Botelho (Universidade Federal do Rio Grande)</i>
A Deep Learning-Based Compatibility Score for Reconstruction of Strip-Shredded Text Documents .87.....	<i>Thiago M. Paixão (Universidade Federal do Espírito Santo & Instituto Federal do Espírito Santo), Rodrigo F. Berriel (Universidade Federal do Espírito Santo), Maria C.S. Boeres (Universidade Federal do Espírito Santo), Claudine Badue (Universidade Federal do Espírito Santo), Alberto F. De Souza (Universidade Federal do Espírito Santo), and Thiago Oliveira-Santos (Universidade Federal do Espírito Santo)</i>
Multimodal Human Action Recognition Based on a Fusion of Dynamic Images Using CNN Descriptors .95.....	<i>Edwin Jonathan Escobedo Cardenas (Federal University of Ouro Preto) and Guillermo Camara Chavez (Federal University of Ouro Preto)</i>
Object-Based Temporal Segment Relational Network for Activity Recognition .103.....	<i>Victor Hugo Cunha de Melo (Universidade Federal de Minas Gerais), Jesimon Barreto Santos (Universidade Federal de Minas Gerais), Carlos Antônio Caetano Júnior (Universidade Federal de Minas Gerais), Jéssica Sena de Souza (Universidade Federal de Minas Gerais), Otávio Augusto Bizetto Penatti (Samsung Research Institute), and William Robson Schwartz (Universidade Federal de Minas Gerais)</i>
Real-Time Automatic License Plate Recognition through Deep Multi-Task Networks .110.....	<i>Gabriel Resende Gonçalves (Universidade Federal de Minas Gerais), Matheus Alves Diniz (Universidade Federal de Minas Gerais), Rayson Laroca (Universidade Federal do Paraná), David Menotti (Universidade Federal do Paraná), and William Robson Schwartz (Universidade Federal de Minas Gerais)</i>
Real-Time Gender Detection in the Wild Using Deep Neural Networks .118.....	<i>Luis Felipe de Araujo Zeni (Universidade Federal do Rio Grande do Sul) and Claudio Rosito Jung (Universidade Federal do Rio Grande do Sul)</i>

Patch PlaNet: Landmark Recognition with Patch Classification Using Convolutional Neural Networks .126.....	
	<i>Kelvin B. da Cunha (Universidade Federal de Pernambuco), Lucas Maggi (Universidade Federal de Pernambuco), Veronica Teichrieb (Universidade Federal de Pernambuco), João Paulo Lima (Universidade Federal Rural de Pernambuco), Jonysberg Peixoto Quintino (Projeto de P&D CIn/Samsung, Universidade Federal de Pernambuco), Fabio Q.B. da Silva (Universidade Federal de Pernambuco), André L.M. Santos (Universidade Federal de Pernambuco), and Helder Pinho (Samsung Instituto de Desenvolvimento para a Informática)</i>
The Shape of the Game .134.....	
	<i>Danilo Barbosa Coimbra (Federal University of Bahia), Tácito Trindade de Araújo Tiburtino Neves (Federal University of Alagoas), Alexandru Cristian Telea (University of Groningen), and Fernando Vieira Paulovich (Dalhousie University & ICMC-USP)</i>
Extracting Visual Encodings from Map Chart Images with Color-Encoded Scalar Values .142.....	
	<i>Angela Mayhua (Universidad Católica San Pablo), Erick Gomez-Nieto (Universidad Católica San Pablo), Jeffrey Heer (University of Washington), and Jorge Poco (Fundação Getulio Vargas)</i>
Visualization of Roll Call Data for Supporting Analyses of Political Profiles .150.....	
	<i>Rodrigo Nunes Moni da Silva (Federal University of Rio Grande do Sul), Andre Spritzer (Federal University of Rio Grande do Sul), and Carla Dal Sasso Freitas (Federal University of Rio Grande do Sul)</i>
A Stable Greedy Insertion Treemap Algorithm for Software Evolution Visualization .158.....	
	<i>Eduardo Faccin Vernier (Federal University of Rio Grande do Sul & University of Groningen), João Luiz Dihl Comba (Federal University of Rio Grande do Sul), and Alexandru Cristian Telea (University of Groningen)</i>
Barrett's Esophagus Identification Using Color Co-Occurrence Matrices .166.....	
	<i>Luis Souza Jr. (Universidade Federal de São Carlos), Alanna Ebigbo (Klinikum Augsburg III), Andreas Probst (Klinikum Augsburg III), Helmut Messmann (Klinikum Augsburg III), João Paulo Papa (Universidade Estadual Paulista), Robert Mendel (Ostbayerische Technische Hochschule Regensburg), and Christoph Palm (Ostbayerische Technische Hochschule Regensburg)</i>
Convolutional Neural Networks for Static and Dynamic Breast Infrared Imaging Classification .174.....	
	<i>Matheus de Freitas Oliveira Baffa (Instituto Federal de Educação, Ciência e Tecnologia do Sudeste de Minas Gerais) and Lucas Grassano Lattari (Instituto Federal de Educação, Ciência e Tecnologia do Sudeste de Minas Gerais)</i>
Multicenter Imaging Studies: Automated Approach to Evaluating Data Variability and the Role of Outliers .182.....	
	<i>Mariana Bento (University of Calgary), Roberto Souza (University of Calgary), and Richard Frayne (University of Calgary)</i>
Robust Feature Spaces from Pre-Trained Deep Network Layers for Skin Lesion Classification .189...	
	<i>Fernando Pereira dos Santos (University of São Paulo) and Moacir Antonelli Ponti (University of São Paulo)</i>

End-to-End Bone Age Assessment with Residual Learning .197.....	<i>Daniel Souza (UFRGS) and Manuel M. Oliveira (UFRGS)</i>
Deep Transfer Learning for Segmentation of Anatomical Structures in Chest Radiographs .204.....	<i>Hugo Oliveira (Universidade Federal de Minas Gerais) and Jefersson dos Santos (Universidade Federal de Minas Gerais)</i>
Example-Based Skin Wrinkle Displacement Maps .212.....	<i>Ron Vanderfeesten (Universiteit Utrecht) and Jacco Bikker (Universiteit Utrecht)</i>
Decoupling Expressiveness and Body-Mechanics in Human Motion .220.....	<i>Gustavo Eggert Boehs (Universidade Federal de Santa Catarina), Milton Luiz Horn Vieira (Universidade Federal de Santa Catarina), and Clovis Geyer Pereira (Universidade Federal de Santa Catarina)</i>
Scene Conversion for Physically-Based Renderers .226.....	<i>Luiza Hagemann (UFRGS) and Manuel M. Oliveira (UFRGS)</i>
Hybrid Cloud Rendering System for Massive CAD Models .234.....	<i>André Moreira (Pontifical Catholic University of Rio de Janeiro), Paulo Ivson (Pontifical Catholic University of Rio de Janeiro), and Waldemar Celes (Pontifical Catholic University of Rio de Janeiro)</i>
A Photon Tracing Approach to Solve Inverse Rendering Problems .242.....	<i>Ignacio Avas (Universidad de la República) and Eduardo Fernández (Universidad de la República)</i>
Single-Shot Person Re-Identification Combining Similarity Metrics and Support Vectors .250.....	<i>Anderson Luís Cavalcanti Sales (Universidade Federal de Ouro Preto), Rafael Henrique Vareto (Universidade Federal de Minas Gerais), William Robson Schwartz (Universidade Federal de Minas Gerais), and Guillermo Camara Chavez (Universidade Federal de Ouro Preto)</i>
On the Learning of Deep Local Features for Robust Face Spoofing Detection .258.....	<i>Gustavo Botelho de Souza (Federal University of São Carlos), João Paulo Papa (São Paulo State University), and Aparecido Nilceu Marana (São Paulo State University)</i>
Analysis and Improvements of Fingerprint Enhancement from Gabor Iterative Filtering .266.....	<i>Ramon Celestino Ramos (Vsoft), Erick Vagner Cabral de Lima Borges (Vsoft), Igor Lucena Peixoto Andrezza (Vsoft), João Janduy Brasileiro Primo (Universidade Federal de Campina Grande), Leonardo Vidal Batista (Universidade Federal da Paraíba), and Herman Martins Gomes (Universidade Federal de Campina Grande)</i>
A Novel Fingerprint Quality Assessment Based on Gabor Filters .274.....	<i>Igor Lucena Peixoto Andrezza (Vsoft), João Janduy Brasileiro Primo (Universidade Federeal de Campina Grande), Erick Vagner Cabral de Lima Borges (Vsoft), Arnaldo Gualberto de Andrade e Silva (Vsoft), Leonardo Vidal Batista (Universidade Federal da Paraíba), and Herman Martins Gomes (Universidade Federal de Campina Grande)</i>

Robust Iris Segmentation Based on Fully Convolutional Networks and Generative Adversarial Networks .281.....	
	<i>Cides S. Bezerra (Federal University of Parana), Rayson Laroca (Federal University of Parana), Diego R. Lucio (Federal University of Parana), Evair Severo (Federal University of Parana), Lucas F. Oliveira (Federal University of Parana), Alceu S. Britto Jr. (Pontifical Catholic University of Parana), and David Menotti (Federal University of Parana)</i>
The Impact of Preprocessing on Deep Representations for Iris Recognition on Unconstrained Environments .289.....	
	<i>Luiz A. Zanlorensi (Federal University of Paraná), Eduardo Luz (Federal University of Ouro Preto), Rayson Laroca (Federal University of Paraná), Alceu S. Britto Jr. (Pontifical Catholic University of Paraná), Luiz S. Oliveira (Federal University of Paraná), and David Menotti (Federal University of Paraná)</i>
Factors Influencing the Perception of Realism in Synthetic Facial Expressions .297.....	
	<i>Rafael Luiz Testa (University of São Paulo), Ariane Machado Lima (University of São Paulo), and Fátima de Lourdes dos Santos Nunes (University of São Paulo)</i>
An Architecture for Collision Risk Prediction for Visually Impaired People .305.....	
	<i>Natal Henrique Cordeiro (Federal Institute of São Paulo) and Emerson Carlos Pedrino (Federal University of São Carlos)</i>
360 Stitching from Dual-Fisheye Cameras Based on Feature Cluster Matching .313.....	
	<i>Tancredo Souza (Universidade Federal de Pernambuco), Rafael Roberto (Universidade Federal de Pernambuco), João Paulo Lima (Universidade Federal Rural de Pernambuco), Veronica Teichrieb (Universidade Federal de Pernambuco), Jonyberg Peixoto Quintino (Universidade Federal de Pernambuco), Fabio Silva (Universidade Federal de Pernambuco), André L.M. Santos (Universidade Federal de Pernambuco), and Helder Pinho (Samsung Instituto de Desenvolvimento para a Informática)</i>
Asynchronous Stroboscopic Structured Lighting Image Processing Using Low-Cost Cameras .321....	
	<i>Frank Helbert Borsato (Federal University of Technology Paraná) and Carlos Hitoshi Morimoto (University of São Paulo)</i>
3D Medical Objects Retrieval Approach Using SPHARMs Descriptor and Network Flow as Similarity Measure .329.....	
	<i>Leila Bergamasco (University of São Paulo), Karla Lima (University of São Paulo), Carlos Rochitte (University of São Paulo), and Fátima de Lourdes dos Santos Nunes (University of São Paulo)</i>
Inverse Projection of Vector Fields .337.....	
	<i>Paula Ceccon Ribeiro (Pontifícia Universidade Católica do Rio de Janeiro) and Hélio Lopes (Pontifícia Universidade Católica do Rio de Janeiro)</i>
Graph Spectral Filtering for Network Simplification .345.....	
	<i>Markus Diego Dias (Universidade de São Paulo), Fabiano Petronetto (Universidade Federal do Espírito Santo), Paola Valdivia (Universidade de São Paulo), and Luis Gustavo Nonato (Universidade de São Paulo)</i>

Image-Based Visualization of Classifier Decision Boundaries .353.....	<i>Francisco Caio M. Rodrigues (University of São Paulo), Roberto Hirata Jr. (University of São Paulo), and Alexandru Cristian Telea (University of Groningen)</i>
xHiPP: eXtended Hierarchical Point Placement Strategy .361.....	<i>Fábio Dias (University of São Paulo) and Rosane Minghim (University of São Paulo)</i>
Analysis of the Influence of Color Normalization in the Classification of Non-Hodgkin Lymphoma Images .369.....	<i>Matheus Gonçalves Ribeiro (São Paulo State University), Leandro Alves Neves (São Paulo State University), Guilherme Freire Roberto (Federal University of Uberlândia), Thaína A. A. Tosta (Federal University of ABC), Alessandro S. Martins (Federal Institute of Triângulo Mineiro), and Marcelo Z. do Nascimento (Federal University of Uberlândia)</i>
Color Quantization in Transfer Learning and Noisy Scenarios: An Empirical Analysis Using Convolutional Networks .377.....	<i>Tiago Santana de Nazare (University of São Paulo), Gabriel de Barros Paranhos da Costa (University of São Paulo), Rodrigo Fernandes de Mello (University of São Paulo), and Moacir Antonelli Ponti (University of São Paulo)</i>
Delaunay Triangulation Data Augmentation Guided by Visual Analytics for Deep Learning .384.....	<i>Alan Zaroni Peixinho (University of Campinas), Bárbara Caroline Benato (University of Campinas), Luis Gustavo Nonato (University of São Paulo), and Alexandre Xavier Falcão (University of Campinas)</i>
Semi-Supervised Learning with Interactive Label Propagation Guided by Feature Space Projections .392.....	<i>Bárbara Caroline Benato (University of Campinas), Alexandru Cristian Telea (University of Groningen), and Alexandre Xavier Falcão (University of Campinas)</i>
Deep Instance Segmentation of Teeth in Panoramic X-Ray Images .400.....	<i>Gil Jader (Federal University of Bahia), Jefferson Fontineli (Federal University of Bahia), Marco Ruiz (Federal University of Bahia), Kalyf Abdalla (Federal University of Bahia), Matheus Pithon (Southeast State University of Bahia), and Luciano Oliveira (Federal University of Bahia)</i>
RISF: Recursive Iterative Spanning Forest for Superpixel Segmentation .408.....	<i>Felipe Lemes Galvão (IC-Unicamp), Alexandre Xavier Falcão (IC-Unicamp), and Ananda Shankar Chowdhury (Jadavpur University)</i>
A Divide-and-Conquer Clustering Approach Based on Optimum-Path Forest .416.....	<i>Adán Echemendía Montero (University of Campinas) and Alexandre Xavier Falcão (University of Campinas)</i>
A Machine Learning Approach for Graph-Based Page Segmentation .424.....	<i>Ana Lucia Lima Marreiros Maia (University of São Paulo & State University of Feira de Santana), Frank Dennis Julca-Aguilar (University of São Paulo), and Nina Sumiko Tomita Hirata (University of São Paulo)</i>

Image-Based State Recognition for Disconnect Switches in Electric Power Distribution Substations .432.....	
	<i>Bogdan Tomoyuki Nassu (Federal University of Technology Parana), Lourival Lippmann Jr. (Institutos Lactec), Bruno Marchesi (Institutos Lactec), Amanda Canestraro (Institutos Lactec), Rafael Wagner (Institutos Lactec), and Vanderlei Zarnicinski (Companhia Paranaense de Energia)</i>
Unsupervised Representation Learning Using Convolutional and Stacked Auto-Encoders: A Domain and Cross-Domain Feature Space Analysis .440.....	
	<i>Gabriel Cavallari (University of São Paulo), Leonardo Ribeiro (University of São Paulo), and Moacir Ponti (University of São Paulo)</i>
Bag of Attributes for Video Event Retrieval .447.....	
	<i>Leonardo A. Duarte (Universidade Federal de São Paulo), Otávio A.B. Penatti (Samsung Research Institute), and Jurandy Almeida (Universidade Federal de São Paulo)</i>
A Benchmark Methodology for Child Pornography Detection .455.....	
	<i>João Macedo (UFMG), Filipe Costa (CPQD), and Jefersson A. dos Santos (UFMG)</i>

Tutorials

A Practical Review on Medical Image Registration: From Rigid to Deep Learning Based Approaches .463.....	
	<i>Natan Andrade (Universidade Federal de São Paulo), Fabio Augusto Faria (Universidade Federal de São Paulo), and Fábio Augusto Menocci Cappabianco (Universidade Federal de São Paulo)</i>
Deep Face Recognition: A Survey .471.....	
	<i>Iacopo Masi (University of Southern California), Yue Wu (University of Southern California), Tal Hassner (Open University of Israel), and Prem Natarajan (University of Southern California)</i>
Biometric Recognition in Surveillance Environments Using Master-Slave Architectures .479.....	
	<i>Hugo Proença (Instituto de Telecomunicações) and João C. Neves (Tomiworld Viseu)</i>
Author Index .487	